ENVIRONMENTAL EDUCATION IN SOCIAL STUDIES: THE INTEGRATED EVALUATION MODEL FOR ENVIRONMENTAL EDUCATION (IEMEE)

Juliet Ossai[1], Caroline Ochuko Alordiah[2]
[1,2] Faculty of Education, University of Delta, Nigeria
email: caroline.alordiah@unidel.edu.ng

ABSTRACT

This paper introduces the Integrated Evaluation Model for Environmental Education (IEMEE), a theoretical framework designed to assess the effectiveness of environmental education initiatives within social studies. The introduction highlights the significance and history of environmental education in social studies, outlining the objectives, research questions, and study problem. The literature review discusses the concept, benefits, theoretical frameworks, and assessment methods related to environmental education. The theoretical framework section identifies key evaluation variables, justifies the selected framework, integrates relevant frameworks, and proposes the IEMEE. The discussion and implications section summarizes the primary findings of the IEMEE, examines its implications for environmental education and evaluators, suggests additional research topics, and provides recommendations for future research. This research contributes to the field of environmental education by offering a comprehensive framework for evaluating programs within social studies, supporting systematic assessment and informed decision-making for program growth and improvement.

Keywords: *Environmental education, social studies, evaluation framework, integrated evaluation model for environmental education (IEMEE), program effectiveness, sustainable behaviour*

INTRODUCTION

People's knowledge of the environment has a big impact on how they see it and how responsible they are for it. The comprehension, critical thinking, and interest of students in modern subjects can all be enhanced by including environmental education into social studies classes. Nevertheless, despite its significance, environmental education in the context of social studies lacks a comprehensive theoretical framework for evaluation (Laaloua, 2023).

This paper aims to bridge this research gap by developing a theoretical framework that allows the evaluation of environmental education in social studies.

By doing this, we intend to provide a valuable tool for assessing the importance and effectiveness of environmental education initiatives within the social studies curriculum for scholars, educators, and lawmakers.

This research is important because it has the potential to improve social studies environmental education methods and results. We can pinpoint successful tactics, industry best practices, and opportunities for further development in the integration of environmental education into social studies by creating a theoretical framework for assessment. Thus, people who possess not just high academic ability but also environmental consciousness and the ability to deal with global concerns may grow into well-rounded people.

We base our investigation on the following research question: How can the creation of a theoretical framework be used to evaluate the effectiveness of environmental education in social studies? By addressing this problem, we hope to advance the field's research in this area and provide educators and policymakers working on social studies programmes that support environmental education with helpful information.

RESEARCH METHOD

This study employed a comprehensive literature review methodology to develop the Integrated Evaluation Model for Environmental Education (IEMEE). A total of 51 research articles were sourced from Google Scholar and the Directory of Open Access Journals (DOAJ), using search terms such as "environmental education," "social studies," "evaluation framework," "effectiveness," and "assessment." The selected articles were analysed using a thematic synthesis approach, which involved identifying key concepts and themes related to environmental education evaluation, coding and categorizing the data into themes and sub-themes, synthesizing the data to identify patterns and relationships, and developing the IEMEE. The articles were selected based on their relevance to environmental education within the social studies context, focus on evaluation frameworks and effectiveness, peer-review status, and publication in English between 2012 and 2023. Through this process, the synthesis of the literature culminated in the development of the IEMEE, a comprehensive theoretical framework aimed at evaluating the effectiveness of environmental education initiatives within the social studies context.

RESULTS AND DISCUSSION
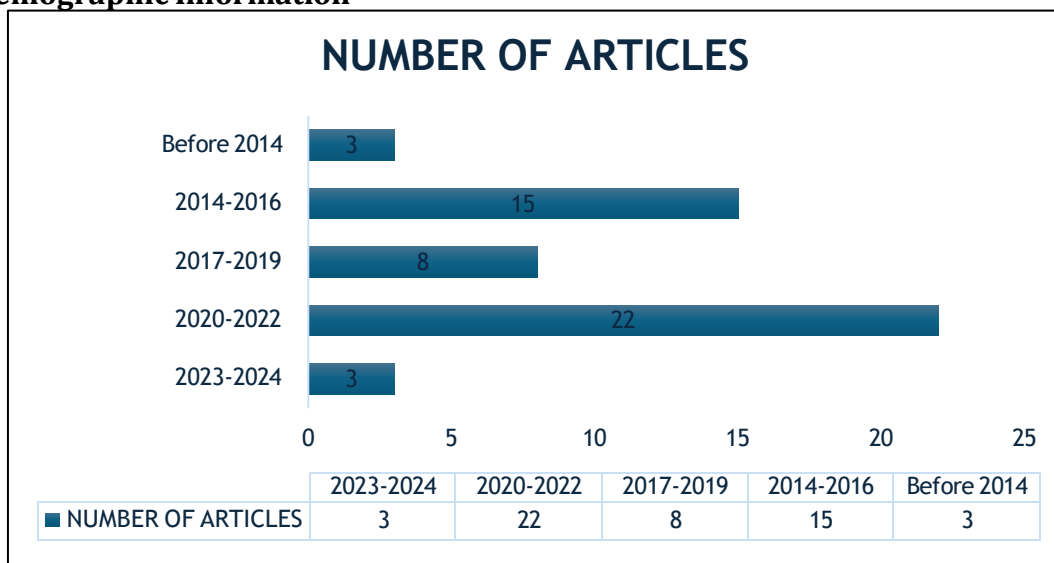**Demographic Information**

Figure 1.
Number of Articles Based on The Year of Publication

Figure 1 presents the distribution of articles related to Environmental Education in Social Studies: A Theoretical Framework for Evaluation based on the year of publication. Most of the articles, 22 in total, were published between 2020 and 2022, indicating a recent surge in research interest in this area. The table also shows that there has been a steady increase in publications on this topic over the years, with 15 articles published between 2014 and 2016. However, there are relatively fewer articles from before 2014, with only 3 articles in total. This suggests a growing recognition of the importance of environmental education within the field of social studies education in recent years.
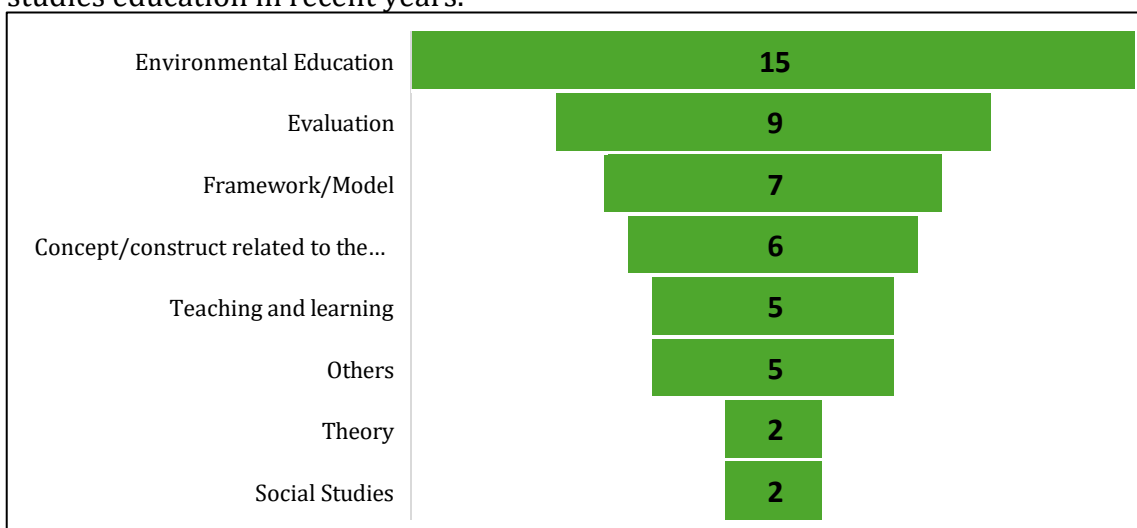

Figure 2.
Number of Articles Based on Area of Focus

Figure 2 provides an overview of the distribution of articles related to digital environmental education in social studies education across different areas. Environmental education has the highest number of articles at 15, indicating a significant focus on the intersection of digital citizenship and environmental issues. Evaluation follows with 9 articles, emphasizing the importance of assessing digital citizenship initiatives within educational settings. The categories of Framework/Model and Concept/construct related to the study each have 7 and 6 articles, respectively, suggesting a strong emphasis on theoretical and conceptual aspects in the research. Additionally, Teaching and learning, Others, Theory, and Social Studies have 5, 5, 2, and 2 articles, respectively, demonstrating the diverse range of topics and disciplines that intersect with the evaluation of environmental education in social studies education.

Definition and Scope of Environmental Education

Environmental education within the realm of social studies aims to enhance individuals' awareness, knowledge, skills, and attitudes towards the environment, encompassing research on ecosystems, resources, and human-environment interactions (Laaloua, 2023). This approach integrates environmental concepts into broader social studies disciplines like civics, geography, and economics, enabling students to explore the interconnectedness of politics, society, culture, and the environment for a deeper understanding of sustainability (Hahn et al., 2014; Eliades et al., 2022). Topics covered in this education include global citizenship, environmental justice, biodiversity, and climate change, fostering ethical reasoning, critical thinking, and environmental responsibility among students (Egan-Simon, 2022).

Defined by the North American Association for Environmental Education, environmental education in social studies involves developing values, concepts, skills, and attitudes to comprehend the interrelations among humans, culture, and the environment (Research et al., 2022). Scholars advocate for a transformative approach to environmental education, emphasizing the importance of empowering students to become change agents capable of addressing environmental challenges through informed decision-making and community engagement (Nardi et al., 2021). By transcending traditional boundaries between environmental education and social studies, a holistic perspective emerges, emphasizing the cultivation of environmentally literate and responsible citizens who grasp the intricate connections between humans and the environment (Eliades et al., 2022).

Importance of Integrating Environmental Education into Social Studies

It is crucial to incorporate environmental education into social studies for a number of reasons.

1. A thorough foundation for comprehending the intricacies of human civilizations, cultures, economy, and political systems is provided by social studies. Social studies students that receive environmental education are able to comprehend the relationships between human activity and the environment on a more

comprehensive level. They gain knowledge of how environmental challenges affect social, economic, and political dynamics and how human actions affect the environment (Reis et al., 2015).

2. Global civilizations and individuals are affected greatly by environmental issues like resource depletion, biodiversity loss, and climate change. Students can investigate these pressing concerns in a more comprehensive social studies framework when environmental education is incorporated into the curriculum. They are able to critically evaluate the political, social, and economic aspects that contribute to environmental issues and look at possible fixes from a variety of angles (Hoekstra, 2019).

3. Social studies environmental education improves students' critical thinking and problem-solving skills. Using a social studies lens to analyse environmental concerns helps students develop critical thinking, data analysis, system interpretation, and consideration of the social, political, and economic implications of potential solutions. They gain the analytical skills, judgement, and practical problem-solving aptitudes required to address environmental concerns (Ichsan, 2020).

4. An emphasis on the environment in social studies education encourages civic engagement and active citizenship. It provides students with the skills they need to grow into informed, responsible citizens that enhance the environment and their local communities. Understanding the social dimensions of environmental issues better prepares students to advocate for environmental sustainability, participate in civic engagement, and participate in local, national, and worldwide environmental decision-making processes (Sarid, 2021).

5. In terms of environmental education, the social studies curriculum and sustainable development principles are in line. It promotes the idea that because social, economic, and environmental factors are interconnected, they should be considered simultaneously for long-term well-being. Pupils who get a solid understanding of the principles of sustainable development will be better equipped to advocate for sustainable practices in their personal and professional lives and make choices that will contribute to a more sustainable future (Janakiraman, 2021).

Theoretical Frameworks for Evaluating Environmental Education
Cognitive Development Theories

Theories of cognitive development provide significant new insights into how individuals acquire knowledge, understand concepts, and evolve cognitively. These theories can be used to evaluate how well environmental education promotes students' cognitive development.

Piaget's Theory of Cognitive Development; The roles that accommodation, assimilation, and active learning play in cognitive development are highly stressed in Piaget's theory. When this concept is applied to environmental education, it suggests that students must engage in hands-on learning, exploration, and reflection in order to grow in their understanding of environmental issues. Assessing

environmental education through Piaget's viewpoint requires assessing students' cognitive processes, such as their ability to categorise, reason, and solve problems in connection to environmental difficulties (Dennick, 2016).

Vygotsky's Sociocultural Theory: Vygotsky's theory highlights the significance of social interactions and cultural surroundings in the process of cognitive development. Within the assessment of environmental education, this idea highlights the significance of group learning, communication, and support systems. Examining environmental education from a sociocultural lens requires considering how students cooperate and talk to build relationships, negotiate meaning, and develop higher order thinking skills (Harvey, 2015).

Bruner's Constructivist Theory: According to Bruner's thesis, students actively develop their own knowledge. It implies that students actively arrange and analyse data in light of their past experiences and knowledge. Using Bruner's approach, environmental education evaluation entails evaluating students' capacity to formulate hypotheses, gather data, and develop their comprehension of environmental ideas through inquiry-based learning, problem-solving, and reflection (Mills et al., 2014).

Social Learning Theory

The way that social interactions and observational learning influence people's attitudes, beliefs, and behaviours is emphasised heavily in Albert Bandura's social learning theory. By considering how students learn from their peers, teachers, and the greater society, social studies educators can evaluate the success of environmental education (Manik et al., 2022). According to social learning theory, people acquire knowledge and abilities through modelling, imitation, and observation. Within the context of environmental education, students can observe and learn from real-world examples of sustainable behaviours, environmental practices, and community projects. By examining environmental education through the lens of social learning theory, researchers can ascertain the extent to which students are exposed to positive environmental role models and the influence of these models on their attitudes and behaviours (Chen, 2014).

Additionally, the idea of social learning highlights the significance of rewards and reinforcement in moulding an individual's behaviour. Researchers can assess how well incentives, rewards, and positive reinforcement work to encourage pupils to act responsibly towards the environment while evaluating environmental education. This may entail evaluating how community service, environmental contests, and recognition programmes affect students' drive and participation in environmental projects (Shafiei, 2020). Furthermore, peer influence and social interactions are important for learning and behaviour modification, according to social learning theory. Researchers might investigate how peer interactions, group discussions, and cooperative projects foster environmental awareness and sustainable practices while evaluating environmental education. They are able to evaluate how much pupils converse, share knowledge, and work together to solve problems in environmental contexts (Moon, 2020). Researchers can learn more

about how students learn, take up environmentally friendly behaviours, and cooperate together by applying social learning theory as a theoretical framework for assessing environmental education. This makes it possible to have a thorough grasp of how environmental education's social components affect students' attitudes, behaviours, and involvement with environmental issues (Kozar, 2013).

Critical Pedagogy

Rooted in the ideas of Paulo Freire, critical pedagogy in environmental education aims to foster social justice, critical consciousness, and transformative action. This approach encourages students to question societal norms and address environmental issues caused by prevailing social and economic systems (Shih, 2018). Critical pedagogy challenges students to critically analyze environmental injustices, understand power dynamics, and propose solutions that address social, economic, and environmental disparities (Abdurrahman, 2023; Bowser, 2021). Emphasizing discussion and collaborative learning, researchers assess student engagement in environmental decision-making, dialogue, and reflection on personal beliefs (Welton et al., 2015). Educators play a crucial role in promoting civic engagement, social awareness, and critical thinking in environmental education, which can be evaluated by their support for inclusive learning environments and student action (Bermudez, 2015). By utilizing critical pedagogy as a theoretical framework, researchers explore the transformative potential of environmental education in fostering students' critical analysis of environmental challenges and inspiring active participation in creating a more just and sustainable society.

Place-based Education

"Place-based education" emphasizes connecting learning to local environments, communities, and cultures to foster students' sense of responsibility and connection to their surroundings. Researchers can use this approach to evaluate how environmental education impacts students' understanding of their social and natural contexts (Sedawi et al., 2021). Through place-based education, researchers can assess how students engage with their local environment, participate in experiential learning, and apply knowledge to real-world issues (Sutaphan, 2019). Collaboration and community involvement are key in place-based learning, allowing researchers to evaluate environmental education by examining students' interactions with local experts, organizations, and communities to address environmental concerns (Baˇnes, et al., 2015). Integrating indigenous knowledge and local culture into the curriculum is valued in place-based education, offering insights into how students learn ecological concepts, sustainable practices, and the cultural significance of their environment (Acharibasam, 2022). This evaluation framework provides a comprehensive understanding of how environmental education enhances students' connection to their local environment, community engagement, and cultural perspectives, ultimately influencing their environmental awareness and commitment to sustainable behaviours.

Evaluation Models and Frameworks in Environmental Education
Kirkpatrick's Four-Level Model

Kirkpatrick's Four-Level Model provides a systematic approach to evaluating environmental education programs, focusing on assessing participants' reactions, learning outcomes, behaviour changes, and overall program results. At Level 1, participant satisfaction and initial responses are measured to understand engagement and program quality (Alordiah, 2024; Harclerode et al., 2016). Level 2 evaluates participants' knowledge and skills acquired through the program to assess learning effectiveness (Brinson, 2015). Behaviour change is assessed at Level 3, examining participants' actions post-program to determine the impact on sustainable practices and environmental consciousness. Level 4 evaluates broader outcomes such as community involvement and policy changes to assess the program's long-term impact (Alordiah, 2024; Schneller et al., 2022). Researchers and educators can utilize Kirkpatrick's model to comprehensively evaluate environmental education programs, from immediate reactions to long-lasting implications, providing a structured framework for assessing program effectiveness (Alordiah, 2024).

Stufflebeam's CIPP Evaluation Model

Stufflebeam's CIPP (Context, Input, Process, Product) Evaluation Model offers a comprehensive framework for evaluating educational initiatives, including environmental education programs. This model focuses on assessing the program's contextual influences, available resources, implementation processes, and outcomes (Warju, 2016). Context Evaluation involves examining the program's alignment with stakeholders' needs, goals, and the broader social and environmental context to understand its relevance and effectiveness within the field of environmental education. Input Evaluation assesses the program's personnel, materials, and resources to ensure they are adequate for effective environmental education delivery (Davis, 2016).

Process Evaluation focuses on evaluating the program's instructional strategies, curriculum design, and implementation methods to gauge the quality of teaching and learning experiences. Product Evaluation aims to assess the program's impacts on the environment, society, and participants' knowledge, skills, and behaviours (Zhang et al., 2016).

Researchers and educators can utilize Stufflebeam's model to conduct a comprehensive evaluation of environmental education programs, providing valuable insights for program improvement and decision-making. This model enables a systematic assessment of the program's history, resources, processes, and outcomes, facilitating continuous program development and enhancement in the field of environmental education (Hasan et al., 2015).

Scriven's Goal-Free Evaluation Model

Scriven's Goal-Free Evaluation Model challenges the traditional approach of setting predetermined goals for program evaluation, advocating for an open-ended

review process that allows for unexpected discoveries. When applied to environmental education, this model involves evaluating programs without assumptions about intended outcomes, focusing instead on examining operations, outcomes, and processes without preconceived notions (Anh, 2018).

The key steps of Scriven's model include data collection from various sources, such as program materials, observations, and interviews, to gather comprehensive and objective data (Williams, 2016). Data analysis aims to identify patterns and unexpected effects impartially, enhancing understanding of program consequences (Niblett, 2020). Evaluation questions are developed based on data analysis to gain deeper insights into program operations and outcomes, evolving as more data is collected (Granit-Dgani et al., 2017).

Interpretation involves making sense of data to understand program benefits and drawbacks, exploring underlying causes of results and contextual nuances (Raselimo, 2013). Recommendations are then provided based on data interpretation to improve program effectiveness and inform future decisions (Blanco et al., 2020). Scriven's model allows for a flexible and nuanced evaluation of environmental education programs, encouraging a deeper exploration of program complexities and providing valuable insights for program enhancement and planning.

Eisner's Connoisseurship and Criticism Model

Eisner's Connoisseurship and Criticism Model offers a unique evaluation paradigm for assessing educational programs, including environmental education, by viewing the evaluator as a connoisseur and critic. This model, developed by Elliot Eisner, focuses on understanding the intricate nuances of educational initiatives, particularly within the realm of environmental education (Nordin, 2019). When applying Eisner's model to environmental education, evaluators analyse programs through aesthetic, moral, and pedagogical lenses.

The key components of Eisner's model include Aesthetic Appreciation, where the creative and sensory aspects of the environmental education program are evaluated to evoke emotional experiences and appreciation for nature (Ortlieb, 2019). Ethical Engagement highlights the importance of ethical considerations in promoting sustainable practices, social responsibility, and environmental ethics within the program (Michalovich et al., 2022). Educational Critique focuses on analysing the educational aspects such as goals, curriculum, instructional methods, and learning outcomes to enhance environmental awareness and critical thinking skills (Pill, 2017). Lastly, Holistic Evaluation encourages evaluators to consider the program's overall impact by integrating findings from aesthetic, ethical, and educational dimensions, providing a comprehensive assessment of the program's effectiveness (Khanipoor et al., 2016). This approach goes beyond mere quantitative measures to capture the full essence of environmental education programs.

Key Constructs and Variables for Evaluation of Environmental Education

Table 1.

Key Construct and Variables for Evaluating Environmental Education

Construct/Variable	Description	Measurement Methods
Environmental Knowledge	The level of understanding and awareness about environmental issues, concepts, and processes.	Pre and post-assessments: Administering quizzes or tests to measure participants' factual knowledge, comprehension of ecological principles.
Environmental Attitudes	Beliefs, values, and emotions towards the environment.	Likert-scale surveys: Using statements to assess participants' agreement or disagreement with environmental beliefs and values. Qualitative interviews: Conducting in-depth interviews to explore the depth and nuances of participants' attitudes towards the environment.
Sustainable Behaviors	Actions and practices that promote environmental sustainability.	Self-reporting: Participants document their sustainable behaviours through activity logs or journals. Direct observations: Researchers observe and record participants' engagement in sustainable actions in real-time. Tracking mechanisms: Using technology (e.g., sensor data, mobile apps) to track participants' sustainable behaviours over a specified period.
Environmental Stewardship	The sense of responsibility, care, and commitment towards the environment.	Likert-scale surveys: Assessing participants' agreement or disagreement with statements related to environmental stewardship. Qualitative interviews: Engaging participants in in-depth conversations to explore their personal connection and commitment to the environment.
Environmental Empathy	The ability to understand and share emotions and experiences of other living beings in nature.	Empathy scales: Using validated scales to measure participants' empathy towards the natural world and other living beings. Qualitative interviews: Conducting open-ended interviews to explore participants' experiences and emotional connection with nature.

Construct/Variable	Description	Measurement Methods
Sense of Place	The emotional and cognitive attachment to specific natural areas or environments.	Place attachment scales: Administering scales to measure participants' attachment to local ecosystems and cultural heritage. Qualitative interviews: Engaging participants in conversations to gather in-depth insights into their sense of place and connection to nature.
Self-efficacy	The perceived confidence and belief in one's ability to engage in sustainable behaviours.	Self-efficacy scales: Using validated scales to measure participants' confidence in overcoming barriers and initiating sustainable actions. Qualitative interviews: Exploring participants' beliefs and perceived capabilities through open-ended interviews and probing questions.
Program Satisfaction	Overall satisfaction with the environmental education program.	Surveys or questionnaires: Administering structured surveys to gather participants' feedback and satisfaction ratings with the program.
Program Engagement	The level of active participation and involvement in the program.	Attendance records: Tracking participants' attendance and participation in program activities. Participation logs: Documenting participants' active engagement and involvement in program-related tasks and discussions. Qualitative interviews: Conducting interviews to delve into participants' motivations and experiences in engaging with the program.

The evaluation of environmental education programs can be achieved through various constructs such as Environmental Knowledge, Environmental Attitudes, Sustainable Behaviors, Environmental Stewardship, Environmental Empathy, Sense of Place, Self-efficacy, Program Satisfaction, and Program Engagement. These constructs help assess participants' understanding, attitudes, behaviours, and emotional connections to the environment. Measurement methods include surveys, interviews, self-reporting techniques, direct observations, Likert-scale surveys, and qualitative interviews. Researchers can gauge participants' knowledge, attitudes, behaviours, commitment to environmental stewardship, empathy towards nature, attachment to natural settings, self-confidence in adopting sustainable practices, satisfaction with the program, and level of engagement through these constructs and measurement techniques. Overall, these constructs provide a comprehensive

framework for evaluating the effectiveness and impact of environmental education programs on participants' environmental awareness and actions.

The Integrated Evaluation Model for Environmental Education (IEMEE)
Bene⬜its and Limitations of The Use of Existing Models in Evaluating Environmental Education Programme

Given the complex nature of environmental education in social studies, it could be suitable to use a combination of assessment approaches. A comprehensive method can be achieved by using aspects from Eisner's Connoisseurship and Criticism Model and Stufflebeam's CIPP Evaluation Model. This would make it possible to assess qualitative information about the integration of environmental concepts, critical thinking abilities, and the program's overall impact, in addition to quantitative data about changes in knowledge or behaviour. Furthermore, adding components of Kirkpatrick's Four-Level Model might shed light on the evaluation's reaction and learning levels (Ju et al., 2020).

Stufflebeam's CIPP Evaluation Model and Eisner's Connoisseurship and Criticism Model are combined in the Integrated Evaluation Model for Environmental Education (IEMEE), which provides a thorough and multifaceted approach. Through the integration of expert judgement and stakeholder engagement, along with a comprehensive assessment of the program's context, inputs, processes, and outcomes, the IEMEE empowers researchers and social studies educators to assess the efficacy, pertinence, and consequences of environmental education in a comprehensive way.

Table 2.
Integrated Evaluation Model for Environmental Education (IEMEE)

Evaluation Component	Description	Variables to be Measured	Measurement Method	Evaluation Criteria
Context Evaluation	Assess the contextual factors that influence the implementation of environmental education in social studies.	Institutional goals, policies, standards	Interviews, surveys, document analysis	Alignment with institutional goals, adherence to policies, availability of resources, community support, barriers and facilitators
Input Evaluation	Evaluate the quality and appropriateness of program inputs, such as curriculum design, teaching materials, and resources.	Curriculum design, teaching materials, resources	Document analysis, expert judgment	Relevance, accuracy, comprehensiveness, alignment with objectives
Process Evaluation	Observe and analyse the	Instructional strategies,	Classroom observations,	Effectiveness, engagement,

Evaluation Component	Description	Variables to be Measured	Measurement Method	Evaluation Criteria
	implementation of the environmental education program, including instructional strategies, teaching methodologies, and student engagement.	teaching methodologies	video recordings, interviews	alignment with learning objectives
Product Evaluation	Assess the outcomes and impacts of the environmental education program, including changes in knowledge, behaviour, and environmental stewardship.	Changes in knowledge, behaviour, environmental stewardship	Pre- and post-tests, surveys, observations	Knowledge gain, behaviour change, environmental awareness
Recommendations	-Provide recommendations for enhancing the environmental education program, including adjustments to curriculum, teaching methods, and resources.	Recommendations for program enhancement	Expert judgment, stakeholder feedback	Feasibility, relevance, effectiveness

The Integrated Evaluation Model for Environmental Education (IEMEE) consists of five evaluation components: Context Evaluation, Input Evaluation, Process Evaluation, Product Evaluation, and Recommendations. Each component includes detailed descriptions, variables to measure, measurement methods, and evaluation criteria. Context Evaluation focuses on contextual elements impacting environmental education implementation in social studies, measuring variables like institutional goals and policies through interviews and surveys. Input Evaluation assesses program inputs' quality and relevance, measuring stakeholder support and curriculum design through expert judgment and surveys. Process Evaluation monitors program implementation, assessing teaching approaches and student engagement using observation and interviews. Product Evaluation evaluates program outcomes, measuring behaviour change and sustainability goals through pre/post-tests and expert opinion. Recommendations suggest improvements for the

program, measuring progress and efficacy through stakeholder feedback and expert judgment. The IEMEE provides a comprehensive assessment model for evaluating environmental education programs in social studies, ensuring alignment with objectives and identifying areas for enhancement.

Implications for Environmental Education in Social Studies and Evaluators

The Integrated Evaluation Model for Environmental Education (IEMEE) has significant implications for assessors and social studies teachers involved in environmental education. It stresses the alignment of programs with institutional goals, the use of relevant teaching resources, and effective teaching techniques to engage students and promote critical thinking and environmental awareness. The IEMEE provides a systematic framework for comprehensive assessments, emphasizing the importance of considering all program components and utilizing diverse measurement techniques. By adhering to the model's evaluation criteria, assessors can offer valuable recommendations for program improvement, enhancing the impact of environmental education in social studies. Ultimately, both environmental education programs and evaluators benefit from the structured approach of the IEMEE, leading to improved outcomes and advancements in environmental education within the social studies context.

CONCLUSION

The paper introduces the Integrated Evaluation Model for Environmental Education (IEMEE), a theoretical framework for assessing environmental education in social studies. It emphasizes the importance of environmental education within the social studies curriculum and offers a structured approach for evaluating its effectiveness. The IEMEE considers various factors like context, input, process, product, and recommendations to provide a comprehensive understanding of environmental education initiatives. The literature review explores theoretical frameworks such as place-based education, critical pedagogy, and social learning theory, as well as assessment models like the Connoisseurship and Criticism Model and the Four-Level Model. The IEMEE integrates these frameworks into a comprehensive model for evaluation. The study emphasizes the need for a thorough assessment strategy in environmental education, discussing implications for programs and evaluators. Future research directions include exploring long-term effects, teaching techniques, and cross-cultural studies. The IEMEE offers a valuable framework for evaluating environmental education programs, supporting their enhancement and promoting environmental stewardship. Suggestion for Further Studies: (1) Conduct longitudinal studies to assess the long-term impact of environmental education programs in social studies. (2) Explore the cultural adaptation and validation of evaluation frameworks, including the Integrated Evaluation Model for Environmental Education (IEMEE). Investigate how the framework can be modified and applied in different cultural contexts to ensure its relevance and effectiveness. (3) Investigate teachers' perspectives and practices

regarding environmental education in social studies. (4) Explore the impact of multi-stakeholder collaboration in environmental education programs in social studies. (5) Investigate the integration of technology in the evaluation of environmental education programs. Explore the use of digital tools, data analytics, and online platforms to enhance the evaluation process, data collection, and analysis.

REFERENCES

Abdurrahman, A., Maulina, H., Nurulsari, N., Sukamto, I., Umam, A. N., & Mulyana, K. M. (2023). Impacts of Integrating Engineering Design Process into STEM Makerspace on Renewable Energy Unit to Foster Students' System Thinking Skills. *Heliyon*, *9*(4), 1–12. https://doi.org/10.1016/j.heliyon.2023.e15100.

Acharibasam, J. B., & McVittie, J. (2022). Connecting children to nature through the integration of Indigenous Ecological Knowledge into Early Childhood Environmental Education. *Australian Journal of Environmental Education, 39*(3), 349–361. https://doi.org/10.1017/aee.2022.37.

Alordiah, C. O. (2024). Evaluation of a Research Training Workshop for Academic Staff in Tertiary Institutions: A Kirkpatrick Model Approach. *Journal of Applied Learning & Teaching (JALT), 7*(1), 303-313 https://doi.org/10.37074/jalt.2024.7.1.32.

Anh, V. (2018). Evaluation Models in Educational Program: Strengths and Weaknesses. *Tạp Chí Nghiên Cứu Nước Ngoài*, *34*(2), 140-150. https://doi.org/10.25073/2525-2445/vnufs.4252.

Băneş, A., Orboi, M.-D., Popescu, C., & Iancu, T. (2015). School-Community Partnership - an Effective Tool, Useful for Environmental Community Development of Romanian Countryside. *International Journal of Learning & Teaching*, *7*(2), 56–56. https://doi.org/10.18844/ijlt.v7i2.169.

Bermudez, A. (2015). Four Tools for Critical Inquiry in History, Social Studies, and Civic Education. *Revista De Estudios Sociales*, *52*, 102–118. https://doi.org/10.7440/res52.2015.07.

Blanco, M. B., Rudman, A. N., Greene, L. K., Razafindrainibe, F., Andrianandrasana, L., & Welch, C. (2020). Back to Basics: Gaps in Baseline Data Call for Revisiting an Environmental Education Program in the SAVA Region, Madagascar. *PLoS ONE 15*(4)*, e0231822*. https://doi.org/10.1371/journal.pone.0231822.

Bowser, G., & Cid, C. R. (2021). Promoting Action Ecology Research Through Integration of Environmental Justice in Undergraduate Ecology Education. *Bulletin of The Ecological Society of America*, *102*(3), e01873. https://doi.org/10.1002/bes2.1873.

Brinson, J. R. (2015). Learning Outcome Achievement in Non-Traditional (Virtual And Remote) Versus Traditional (Hands-On) Laboratories: A Review of The Empirical Research. *Computers & Education*, *87*, 218–237. https://doi.org/10.1016/j.compedu.2015.07.003.

Chen, J. S., & Martin, A. (2015). Role-Play Simulations as a Transformative Methodology in Environmental Education. *Journal of Transformative Education*, *13*(1), 85–102. https://doi.org/10.1177/1541344614560196.

Davis, J. M. (2016). Toward a Capacity Framework for Useful Student Learning Outcomes Assessment in College Foreign Language Programs. *The Modern Language Journal*, *100*(1), 377-399. https://doi.org/10.1111/modl.12319.

Dennick, R. (2016). Constructivism: Reflections on Twenty-Five Years Teaching the Constructivist Approach in Medical Education. *International Journal of Medical Education*, *7*, 200–205. https://doi.org/10.5116/ijme.5763.de11.

Egan-Simon, D. (2022). Active Agents of Change: A Conceptual Framework for Social Justice-Orientated Citizenship Education. *Equity in Education & Society*, *1*(2), 297–310. https://doi.org/10.1177/27526461221089350.

Eliades, F., Doula, M. K., Papamichael, I., Vardopoulos, I., Voukkali, I., & Zorpas, A. A. (2022). Carving Out a Niche in the Sustainability Confluence for Environmental Education Centers in Cyprus and Greece. *Sustainability*, *14*(14), 8368–8368. https://doi.org/10.3390/su14148368.

Granit-Dgani, D., Kaplan, A., & Flum, H. (2017). Theory-Based Assessment in Environmental Education: A Tool for Formative Evaluation. *Environmental Education Research*, *23*(2), 269–299. https://doi.org/10.1080/13504622.2016.1144172.

Hahn, C. L., Bernard-Powers, J., Crocco, M. S., & Woyshner, C. (2014). *Gender Equity in Social Studies*. 365–388. https://doi.org/10.4324/9781315759586-27.

Harclerode, M., Lal, P., Vedwan, N., Wolde, B., & Miller, M. I. (2016). Evaluation of the Role of Risk Perception in Stakeholder Engagement to Prevent Lead Exposure in An Urban Setting. *Journal of Environmental Management*, *184*, 132–142. https://doi.org/10.1016/j.jenvman.2016.07.045.

Harvey, J., & Vásquez, C. (2015). *Preparing for the Complexities of Teaching: Modeling Conceptual Thinking in Post-Observation Conferences*. *68*(1), 091–091. https://doi.org/10.5007/2175-8026.2015v68n1p91.

Hasan, A., Yasin, S. M., & Yunus, M. A. C. (2015). A Conceptual Framework for Mechatronics Curriculum Using Stufflebeam CIPP Evaluation Model. *Procedia - Social and Behavioral Sciences*, *195*, 844–849. https://doi.org/10.1016/j.sbspro.2015.06.324.

Hoekstra, R. (2020). SNA and beyond: Towards a Broader Accounting Framework That Links The SNA, SDGS And Other Global Initiatives. *Statistical Journal of the IAOS*, *36*(3), 657–675. https://doi.org/10.3233/sji-200653.

Ichsan, I. Z., Sigit, D. V., Fachrial, N. F. H., Nurafifah, S., Ali, A. T., Sison, M. H., Nurfadhilah, N., Sa'diyah, R., & Rahmaniar, Y. (2022). HOTSCC-Ichsan: HOTS of Climate Change with Ichsan's Taxonomy for Elementary Teacher Candidates. *Jurnal Penelitian Pendidikan IPA (JPPIPA)*, *8*(1), 13–17. https://doi.org/10.29303/jppipa.v8i1.930.

Janakiraman, S., Watson, S. L., Watson, W. H., & Cheng, Z. (2021). Creating Environmentally Conscious Engineering Professionals Through Attitudinal Instruction: A Mixed Methods Study. *Journal of Cleaner Production*, *291*, 125957–125957. https://doi.org/10.1016/j.jclepro.2021.125957.

Ju, H., Minkyung, O., Lee, J.-H., & Yoon, B. H. (2021). Adapting an Integrated Program Evaluation for Promoting Competency-Based Medical Education. *Korean Medical Education Review*, *23*(1), 56–67. https://doi.org/10.17496/kmer.2021.23.1.56.

Khanipoor, F., Amini, M., & Bazrafkan, L. (2017). Evaluation of Educational Program in the Master of Medical Education by Eisner's Educational Connoisseurship and Criticism Model. *PubMed*, *6*, 55–55. https://doi.org/10.4103/jehp.jehp_103_15.

Kozar, J. M., & Connell, K. Y. H. (2013). Socially and Environmentally Responsible Apparel Consumption: Knowledge, Attitudes, and Behaviors. *Social Responsibility Journal*, *9*(2), 315–324. https://doi.org/10.1108/srj-09-2011-0076.

Laaloua, H. (2023). The Role of Education in Addressing Environmental Challenges: A Study of Environmental Education Integration in Moroccan Geography Textbooks. *International Journal of Social Science and Human Research*, *06*(04), 2317-2325. https://doi.org/10.47191/ijsshr/v6-i4-41.

Manik, S., Sembiring, M., Padang, I., & Manurung, L. (2022). Theory of Bandura's Social Learning in The Process of Teaching at SMA Methodist Berastagi Kabupaten Karo. *Jurnal Visi Pengabdian Kepada Masyarakat*, *3*(2), 85–96. https://doi.org/10.51622/pengabdian.v3i2.729.

Michalovich, A., Mayer, Y., Hershler, L., Bulk, L. Y., Cook, C., Graf, H., Lee, M. D., Belliveau, G., & Jarus, T. (2022). Through a Glass Brightly: Generative Ethical Tensions in Research-Based Theatre. *Qualitative Inquiry*, *29*(2), 267–276. https://doi.org/10.1177/10778004221097677.

Mills, L. A., Knezek, G., & Khaddage, F. (2014). Information Seeking, Information Sharing, and Going Mobile: Three Bridges to Informal Learning. *Computers in Human Behavior*, *32*, 324–334. https://doi.org/10.1016/j.chb.2013.08.008.

Moon, J., & Ke, F. (2020). Exploring the Relationships Among Middle School Students' Peer Interactions, Task Efficiency, and Learning Engagement in Game-Based Learning. *Simulation & Gaming*, *51*(3), 310–335. https://doi.org/10.1177/1046878120907940.

Nardi, F., Cudennec, C., Abrate, T., Allouch, C., Annis, A., Assumpção, T. H., Aubert, A. H., Berod, D., Braccini, A. M., Buytaert, W., Dasgupta, A., Hannah, D. M., Mazzoleni, M., Polo, M. J., Sæbø, Ø., Seibert, J., Tauro, F., Teichert, F., Teutonico, R. A., Uhlenbrook, S., Vargas, C. W., & Grimaldi, S. (2021). Citizens AND HYdrology (CANDHY): Conceptualizing a Transdisciplinary Framework for Citizen Science Addressing Hydrological Challenges. *Hydrological Sciences Journal,* *67*(16), 2534–2551. https://doi.org/10.1080/02626667.2020.1849707.

Niblett, B. (2020). Integrating Advocacy and Environmental Education: A Response to Burns & Norris. *Paideusis*, *20*(1), 4–13. https://doi.org/10.7202/1071839ar.

Nordin, A., & Wahlström, N. (2019). Transnational Policy Discourses on 'Teacher Quality': An Educational Connoisseurship and Criticism Approach. *Policy Futures in Education*, *17*(3), 438–454. https://doi.org/10.1177/1478210318819200.

Ortlieb, S. A., & Carbon, C.-C. (2019). A Functional Model of Kitsch and Art: Linking Aesthetic Appreciation to the Dynamics of Social Motivation. *Frontiers in Psychology*, *9*, 1-17. https://doi.org/10.3389/fpsyg.2018.02437.

Pill, S., & SueSee, B. (2017). Including Critical Thinking and Problem Solving in Physical Education. *Journal of Physical Education, Recreation & Dance*, *88*(9), 43–49. https://doi.org/10.1080/07303084.2017.1367741.

Raselimo, M., & Wilmot, D. (2013). Geography Teachers' Interpretation of A Curriculum Reform Initiative: The Case of the Lesotho Environmental Education Support Project (LEESP). *South African Journal of Education*, *33*(1), 1–15. https://doi.org/10.15700/saje.v33n1a681.

Research, N. T., & Margaretann G. Connell, Ph. D. (2022). *Tscion Research Environmental Education, Enrichments, and Stewardship (TREEES)*. *1*(1). https://doi.org/10.58525/tsd.v1i1.9.

Reis, S., Morris, G. D., Fleming, L. E., Beck, S. L., Taylor, T. S., White, M., Depledge, M. H., Steinle, S., Sabel, C. E., Cowie, H., Hurley, F., Dick, J., Smith, R. J. E., & Austen, M. C. (2015). Integrating Health and Environmental Impact Analysis. *Public Health*, *129*(10), 1383–1389. https://doi.org/10.1016/j.puhe.2013.07.006.

Sarid, A., & Goldman, D. (2021). A Value-Based Framework Connecting Environmental Citizenship and Change Agents for Sustainability—Implications for Education for Environmental Citizenship. *Sustainability*, *13*(8), 4338–4338. https://doi.org/10.3390/su13084338.

Schneller, A. J., Lacy, G., Kellogg, S., Pettigrew, S., Denny, C., Feldman-Schwartz, G., Beard, I., Rhodes, A., Radcliffe, B. W., Erickson, A., & Bardin, I. (2022). Urban Ecojustice Education: Transformative Learning Outcomes with High School Service Learners. *The Journal of Environmental Education*, *53*(3), 1–14. https://doi.org/10.1080/00958964.2022.2063784.

Sedawi, W., Assaraf, O. B.-Z., & Reiss, M. (2021). Regenerating Our Place: Fostering a Sense of Place Through Rehabilitation and Place-Based Education. *Research in Science Education*, *51*(S1), 461–498. https://doi.org/10.1007/s11165-019-09903-y.

Shafiei, A., & Maleksaeidi, H. (2020). Pro-environmental Behavior of University Students: Application of Protection Motivation Theory. *Global Ecology and Conservation*, *22*, e00908–e00908. https://doi.org/10.1016/j.gecco.2020.e00908.

Sutaphan, S., & Yuenyong, C. (2019). STEM Education Teaching Approach: Inquiry from the Context Based. *Journal of Physics*, *1340*(1), 012003–012003. https://doi.org/10.1088/1742-6596/1340/1/012003.

Warju, W. (2016). Educational Program Evaluation Using CIPP Model. *Innovation of Vocational Technology Education*, *12*(1), 36-42. https://doi.org/10.17509/invotec.v12i1.4502.

Welton, A. D., Harris, T. G., La Londe, P. G., & Moyer, R. T. (2015). Social Justice Education in a Diverse Classroom: Examining High School Discussions about Race, Power, and Privilege. *Equity & Excellence in Education*, *48*(4), 549–570. https://doi.org/10.1080/10665684.2015.1083839.

Williams, C., & Chawla, L. (2016). Environmental Identity Formation in Nonformal Environmental Education Programs. *Environmental Education Research*, *22*(7), 978–1001. https://doi.org/10.1080/13504622.2015.1055553.

Zhang, J., Schmidt, K. M., & Li, H. (2016). BIM and Sustainability Education: Incorporating Instructional Needs into Curriculum Planning in CEM Programs Accredited by ACCE. *Sustainability*, *8*(6), 525–525. https://doi.org/10.3390/su8060525.